CLASS 76, METAL TOOLS AND IMPLEMENTS, MAKING

SECTION I - CLASS DEFINITION

This class comprises special machines, processes, blanks, and dies for making tools, many of which are designated by the subclass titles, while the remainder are to be found in the proper miscellaneous subclasses.

The class includes mechanisms for sharpening various cutting-tools by the removal of the stock adjacent to the edge of the same by a cutting or filing action as distinguished from an abrading action. Mechanism for sharpening harrow-disks, etc., are included in this class because of their analogy to the other types of cutting sharpeners (see Subclass References to This Class, below).

This class also includes machines and processes for making dies, whether to be used as hand-operated implements or in forging or other machines.

General operation machines, though adapted by the substitution of special tool-forming dies to form tools, are classified in the general operation classes.

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

85+, for mechanism for sharpening harrow-disks, etc.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

72, Metal Deforming, appropriate subclasses for a process or an apparatus for shaping metal by merely deforming it, e.g., twisting a drill bit or rolling a saw blank, or the same including cutting; and subclasses 462+ for a tool, e.g., a die, per se.

100, Presses, appropriate subclasses, for presses not elsewhere provided for.

493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, subclass 905 for cutting a peephole in a box blank.

SUBCLASSES

1 Machines for making tools and implements not classifiable elsewhere.

2 Machines specially adapted to form augers.

SEE OR SEARCH CLASS:

409, Gear Cutting, Milling, or Planing, subclasses 65+ for a machine for cutting a spiral groove in an auger.

72, Metal Deforming, subclasses 64+ and 298+.Machines for twisting augers.

3 Machines for cutting away the material of the auger-bit adjacent to the cutting edge to give clearance to the blade and also machines for forming the cutting-lips of the bit.

SEE OR SEARCH CLASS:

451, Abrading, for grinding, generally.

4 Machines specially adapted to form dies to be used in metal shaping or forging machines or in punching-machines.

SEE OR SEARCH CLASS:

82, Turning.

100, Presses, appropriate subclasses for presses not elsewhere provided for.

409, Gear Cutting, Milling, or Planing. for a machine adapted to cut a die.

5.1 Drill forming or sharpening:

This subclass is indented under the class definition. Machine specifically adapted to change a member having some of the physical characteristics of a drill (i.e., a drill blank) to a member having the physical characteristics of a drill; or (2) to make the cutting of a drill of better shape for cutting.

SEE OR SEARCH CLASS:

72, Metal Deforming, subclasses 64+ and 298+ for twisting metal to form a twist-drill blank.

409, Gear Cutting, Milling or Planing, subclasses 65+ for milling a groove in a member to form a drill blank.

451, Abrading, for sharpening a drill by grinding with an abrasive material.

5.4 **Forging:**
This subclass is indented under subclass 5.1. Machine comprising changing a drill blank to a drill by the action of a pair of dies having opposite shape to that of the desired drill, that move toward each other to effect shaping.

5.6 **Punching:**
This subclass is indented under subclass 5.1. Machine comprising changing a drill blank to a drill by the action of a fixed tool and a movable tool that moves toward the fixed tool to shape the blank therebetween.

6 Machines for forging tool-heads which are provided with eyes in which the handle is to be secured, also machines for piercing the eyes, and machines for making hammers, picks, mattocks, and hoes having eyes for the handles.

SEE OR SEARCH CLASS:
72, Metal Deforming, appropriate subclasses and particularly subclasses 343+.

7 Machines specially adapted to forge and shape ax-polls and hatchet-heads.

SEE OR SEARCH THIS CLASS, SUBCLASS:
6,

8 Machines having plungers or dies adapted to be adjusted in such a manner that ax-heads having different weights may be forged in the same dies.

9 Machines adapted to forge and shape various tool-heads having handle-sockets (not eyes), straps, or tangs, including hoes, shovels, rakes, pitchforks, etc.

10 Machines specially adapted to forge and shape the parts of wrenches.

11 Machines for splitting tool-blanks, usually for the purpose of forming the “straps” to which the handle is secured. Also machines for splitting ax-polls for the insertion of the steel bit.

12 Miscellaneous machines for forming the cutting ribs or teeth of files and rasps.

(1) Note. For electrolytic apparatus used to sharpen or resharpen files, see Class 204, Chemistry: Electrical and Wave Energy, subclasses 194+.

(2) Note. For electrolytic processes for sharpening or resharpening files, see Class 205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclass 664.

SEE OR SEARCH THIS CLASS, SUBCLASS:
28, for machines which form saw teeth by forcing a chisel into the edge of a blank to cut and swage up the teeth.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 77 for machines and processes for preparing file-blanks by filing the surfaces of the rough blanks.
72, Metal Deforming, for forging and swaging apparatus peculiarly adapted for forging toothed articles such as milling cutters, tapping tools, etc.
204, Chemistry: Electrical and Wave Energy, subclasses 194+ for an electrolytic apparatus used to sharpen or resharpen a file or rasp.
205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclass 664 for electrolytic sharpening or resharpening of a file or rasp.
451, Abrading, for a process of or machine for cleaning or resharpening a file by means of a blast of sand or other abrading material.

13 Machines specially adapted to form rasping-teeth upon file-blanks, usually by swaging up the teeth from the surface of the blank by means of punches. These machines are usually characterized by mechanism adapted to shift the bed or the tool in such a manner as to form the teeth in staggered rows.

14 Machines which force up the file-ribs by means of a cutter or punch which is actuated by pressure as distinguished from a blow.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13,

SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 184+ for "roller" grooving of work, and other appropriate subclasses for metal deforming by other means.

15 Machines in which the cutter is raised against a spring or weight by means of a trip-cam or other device, which upon release causes the cutter to strike a blow upon the file-blank.

16 Machines in which the cutter is raised against a spring or weight by means of a trip-cam, which upon release causes the cutter to strike a blow upon the file-blank and which is provided with means, usually automatic, for increasing or decreasing the force of the blow in conformity to the width or thickness of the file-blank as it is fed beneath the cutter.

17 Machines in which the cutter is supported over the blank, usually by a spring, and is struck by a hammer, generally power-operated.

18 Machines in which the cutter is supported over the blank, usually by a spring, and is struck by a power-operated hammer, the force of the blow being increased or diminished, usually automatically in conformity to the width or thickness of the file-blank as it is fed beneath the cutter.

19 Pressers for holding the file-blank upon the bed of the file-cutting machine.

SEE OR SEARCH CLASS:
100, Presses, appropriate subclasses for presses not elsewhere provided for.

20 Beds for supporting the file-blanks, also the clamps for securing said blanks to the beds.

(1) Note. The beds in this class are mostly of the oscillating type.

21 Cutter-heads and holders for the cutting-tool or punch of file or rasp making machines.

22 Miscellaneous devices for feeding the blanks to the file cutting or punching mechanisms.

SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

23 Mechanisms for feeding the blanks to the file cutting or punching devices, comprising a screw-feed for advancing the blank carriage or clamp.

24.1 Process:
This subclass is indented under subclass 12. Method of forming cutting ribs or teeth on the surface of a file or rasp.

SEE OR SEARCH CLASS:
204, Chemistry: Electrical and Wave Energy, subclasses 194+ for an electrolytic apparatus used to sharpen or resharpen a file or rasp.
205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclass 664 for electrolytic sharpening or resharpening of a file or rasp.

24.5 Chemically sharpening:
This subclass is indented under subclass 24.1. Method of restoring previously sharpened cutting edges of a file or rasp to sharp condition by application of a chemical that modifies the surface characteristics thereof.

25.1 SAW-MAKING OR FURBISHING DEVICE OR MACHINE:
This subclass is indented under the class definition. Miscellaneous apparatus for changing a saw blank into a toothed saw blade or for treating a saw blade to make it more suitable for sawing.

(1) Note. A "saw blank" normally comprises a metallic sheet having two generally parallel planar surfaces and a perimeter; a "saw blade" is similar in structure but has formed along at least a portion of the perimeter a series of

aligned cutting teeth intended to follow each other in a cutting action.

(2) Note. The apparatus of this subclass may ba a randomly manipulated hand tool, i.e., a "device" or it may be a base mounted structure, i.e., a "machine".

SEE OR SEARCH THIS CLASS, SUBCLASS:
112, for method of changing a saw blank into a toothed saw blade, and for a saw blank, per se.

SEE OR SEARCH CLASS:
451, Abrading, for grinding to shape, generally, including sharpening a drill or other tool, other than a saw. Note that abrading to sharpen a saw, contrary to the general line between Class 76 and Class 451, is included in Class 76.

26 Machines for stretching and straightening saw-blades or sections thereof for the purpose of reducing "buckled" portions by means of a hammering action; also devices for supporting saws upon anvils, thus adapting them to be stretched by a manually-operated tool.

27 Machines for stretching and straightening saw-blades, comprising a pair of rollers or a roller and bed, between which the saw-blade is passed.

SEE OR SEARCH CLASS:
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

28 Machines in which saw-teeth are formed upon a blank by means of a chisel, which, being forced into the edge of the blank cuts and swages up the saw-teeth, also machines having chisel-cutters adapted to shave the tooth, the line of movement of the cutter being in the plane of the disk.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12+,

SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 325+ for a composite metal deforming and cutting tool.

29 Machines for notching the blank to form saw-teeth by means of a cutting-die or punch.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30,

SEE OR SEARCH CLASS:
83, Cutting, appropriate subclasses for cutting devices generally, and particularly subclass 917 for notching devices.

30 Machines which remove the metal at the bases of saw-teeth to lengthen the teeth by means of a die-cutter or punch.

SEE OR SEARCH THIS CLASS, SUBCLASS:
29,

SEE OR SEARCH CLASS:
83, Cutting, appropriate subclasses and particularly subclass 917 (notching).

31 Machines for sharpening saws in which a file or sharpening tool is positively guided in its reciprocation across the saw. The patents in this subclass are mainly hand-operated devices.

32 Machines provided with reciprocating sharpening tools especially adapted to sharpen gin-saws. These machines are usually characterized by crossed files.

SEE OR SEARCH THIS CLASS, SUBCLASS:
37, and indented subclasses for machines for sharpening gin-saws by means of a rotary file or grinder are classified in this class, subclass

33 Machines for sharpening the teeth of saws by means of a reciprocating file or tool in which the carriage supporting the filing mechanism is automatically moved forward as the successive teeth are sharpened.

SEE OR SEARCH THIS CLASS, SUBCLASS:

31, for machines in which the carriage is fed forward by hand.

34 Machines in which the saw-teeth are sharpened by a reciprocating file or tool and which are provided with automatic means for feeding the saw-clamp forward as the successive teeth are sharpened.

SEE OR SEARCH THIS CLASS, SUBCLASS:

76, for clamp-feeding mechanism.

35 Machines in which the saw-teeth are sharpened by a reciprocating file or tooth and which are provided with means for engaging the teeth of the saw and feeding it forward as the successive teeth are sharpened.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, subclasses 52+ for means to engage modifications in material to advance the material.

36 File-holders having guides or indicators attached to and carried by the file in its movement which show to the operator the angle at which the file is being held.

SEARCH THIS CLASS, SUBCLASS:

31, for guides supported by the saw-clamp.

SEE OR SEARCH CLASS:

407, Cutters, for Shaping, subclass 29.15 for a file or rasp holder, per se.

37 Miscellaneous machines which sharpen the teeth of saws by means of a rotary file, milling-tool, or abrading-tool, not classifiable in the following subclasses.

SEE OR SEARCH CLASS:

408, Cutting by Use of Rotating Axially Moving Tool, appropriate subclasses, for drilling machines which feed the work or tool or both relative to one another along the axis of rotation of the tool; and see the Notes thereto for other machines in which a rotating tool is fed relative to work.

38 Machines which sharpen the teeth of saws by means of a helical or spiral file, cutter, or abrading devices.

SEE OR SEARCH CLASS:

409, Gear Cutting, Milling, or Planing, subclasses 1+ for gear cutting, generally.

39 Machines which sharpen saws by means of a rotary file or abrading-disk having oblique or helical ribs adapted to engage the teeth of the saw for the purpose of feeding the saw forward. The disks or cutters in this class of machines usually have a section broken away to permit the feeding of the saw.

40 Machines for sharpening the teeth of saws in which a rotary file or abrading-tool carried by a pivoted gate or bracet is adapted to be swung toward and from the saw-blade.

41 Machines for sharpening the teeth of saws in which a rotary file or abrading-tool supported upon a sliding gate is adapted to be reciprocated toward and from the saw-blade.

42 Machines for sharpening the teeth of saws by means of a rotating file, cutter, or abrading-tool in which the saw is supported upon a pivoted carriage and adapted to be swung against the rotating tool.

43 Machines for sharpening saws by means of a rotating file, cutter or abrading-tool in which the saw is supported upon a sliding carriage and is adapted to be reciprocated into contact with the rotating tool.

44 Machines which remove the metal at the bases of saw-teeth to lengthen the teeth by means of milling-cutters. This subclass also includes machines having annular cutters.

45 Filing, grinding, or other disks or cutters especially adapted for sharpening and gumming saw-teeth. This subclass includes spiral files.

SEE OR SEARCH CLASS:

83, Cutting, subclasses 174+ for tool sharpeners for cutting devices.

407, Cutters, for Shaping, subclasses 30+ for a rotary cutter which may be the product of the device of this subclass.

46 Machines and implements in which devices for truing, the teeth of saws by side-dressing or making the teeth of uniform length are combined with a gage which is adapted to determine the relative length of the teeth or the amount of set of the teeth.

47.1 Dressing or jointing:
This subclass is indented under subclass 25.1. Furbishing apparatus for (1) making the side surface of aligned teeth of the saw blade touch a common plane parallel with the plane of a planar surface of the blade; or (2) making the teeth of a desired common height.

48 Devices specially adapted to true the teeth of circular saws in such a manner that the points of all the teeth will lie in the circumference of a circle; also devices for truing the sides of the teeth of saws.

49 Machines and implements for shaping and truing the points and sides of the teeth of saws by swaging. These machines are generally adapted to be used on circular saws.

50 Machines having rotary cutting or abrading devices for truing the points and sides of the teeth of saws.

50.2 Band saw dressing:
This subclass is indented under subclass 47.1. Furbishing for making the side surface of aligned teeth of a saw blade touch a common plane parallel with the plane of a planar surface of the blade; wherein the blade comprises a flexible, endless ribbon.

50.4 Jointing:
This subclass is indented under subclass 47. Furbishing apparatus ,1 for making the teeth of a desired common height.

51 Miscellaneous implements, machines, and processes for widening the points of the teeth of saws, not classifiable in the following subclasses. This subclass also includes devices for "knocking down" the points of the teeth of saws.

SEE OR SEARCH CLASS:
72, Metal Deforming, for metal swaging or forging apparatus generally.

52 Machines in which the swaging-tool is pivotally supported and is forced forward to swage the tooth by means of a lever or system of levers.

SEE OR SEARCH THIS CLASS, SUBCLASS:
63,

53 Machines in which the swage is slidably mounted and is adapted to be forced forward to swage the tooth by means of a lever or a system of levers.

SEE OR SEARCH THIS CLASS, SUBCLASS:
68,

54 Machines for widening the points of the teeth of saws by means of camfaced swages, the swages being in many instances provided with rollers. These machines are used for sharpening or renewing the teeth of saws. This subclass also includes cam-swaging machines for "knocking down" the points of teeth and for swaging the raker-teeth of crosscut-saws.

55 Machines for swaging the teeth of saws in which the tooth is supported upon an anvil and a punch normally supported in proper position over the anvil, usually by a spring, is adapted to be struck by a hammer.

SEE OR SEARCH THIS CLASS, SUBCLASS:
65, and 70.

56 Implements for swaging the teeth of saws, usually "punches", having properly formed swaging-faces adapted to be held in the hand and struck by a hammer; also tools for "knocking down" the points of the saw-teeth.

57 Specially-formed anvils upon which the saw tooth is held by means of clamps or otherwise and the tooth swaged by being struck with a hammer or a punch held in the hand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
73,

SEE OR SEARCH CLASS:
72, Metal Deforming, subclasses 457+ and 476+ for a metal working anvil, per se, not otherwise provided for.

58 Miscellaneous machines, implements, and processes for bending the teeth of saws laterally in order to give proper clearance in the cut or kerf made by the saw.

59 Machines in which the teeth of the saw are given set by means of a rotary set--as, for example, toothed or corrugated rolls or disks.

60 Machines in which the tooth-setting devices are forced into engagement with the teeth by means of a screw.

61 Instruments having pivotally-mounted sets adapted to act upon a plurality of teeth simultaneously. They are usually for simultaneously bending adjacent teeth in opposite directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
66,

62 Machines in which the set or punch is carried by a pivoted arm, usually spring-actuated, and adapted to be operated by a trip dog or cam.

SEE OR SEARCH THIS CLASS, SUBCLASS:
15, and 67.

63 Machines in which the set or punch is carried by a lever-operated pivoted arm and is adapted to bend the tooth against a properly formed anvil.

SEE OR SEARCH THIS CLASS, SUBCLASS:
52, and 68.

64 Hand implements in the form of pliers in which the set or punch is carried by a pivoted arm which is actuated by one of the plier-handles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
69,

65 Machines in which a set or punch carried upon a pivoted arm is adapted to be struck by a hammer to give set to a tooth held upon a properly formed anvil.

SEE OR SEARCH THIS CLASS, SUBCLASS:
55, and 70.

66 Machines and implements having slidably-mounted sets adapted to act upon a plurality of teeth simultaneously. These devices are usually for simultaneously bending adjacent teeth in opposite directions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
61,

67 Machines in which a slidably mounted set, usually spring-actuated, is operated by a trip dog or cam.

SEE OR SEARCH THIS CLASS, SUBCLASS:
62,

68 Machines in which a set slidably supported is operated by a lever or a cam-lever to bend the tooth against a suitably formed anvil.

SEE OR SEARCH THIS CLASS, SUBCLASS:
63,

69 Hand implements in the form of pliers in which a slidably-mounted set is actuated by one of the pivoted handles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
64,

70 Machines in which a set slidably supported, usually by means of a spring, is adapted to be struck by a hammer to give set to a tooth held upon a suitably formed anvil.

SEE OR SEARCH THIS CLASS, SUBCLASS:
55, and 65.

71 Machines and implements having means for engaging or embracing the tooth, the lateral (or oscillating) movement of the device serving to bend the tooth to the proper set without the cooperation of an anvil.

72 Machines and implements in which the tooth is bent by means of a wedge-shaped punch or swaging device.

73 Bevel-faced anvils upon which the saw is laid and the teeth bent to conform to the beveled face of the anvil by being struck by a manually-operated hammer.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57,

74 Devices adapted to support and guide saws to sharpening, dressing, or setting mechanisms. These guides are usually used to support band saws.

SEE OR SEARCH CLASS:
83, Cutting, subclasses 719+ for tool guides.
269, Work Holders, appropriate subclasses. Class 269 is the residual locus for patents to a device for clamping, supporting and/or holding an article (or articles) in position to be operated on or treated. See notes thereunder for other related loci.

75 Mechanisms adapted to feed the saw-blank or saw to mechanisms for operating upon the same, not classifiable in the following subclasses.

SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

76 Mechanisms for feeding a clamp which holds the saw or saw-blank to the devices which operate upon the saw blade or teeth.

SEE OR SEARCH THIS CLASS, SUBCLASS:
22, and 34.

77 Mechanisms for feeding the saw to the devices which operate upon the saw handle or teeth, which comprise a reciprocating pawl or other means for engaging successive teeth of the saw to feed the saw forward.

SEE OR SEARCH THIS CLASS, SUBCLASS:
35,

78.1 Clamp:
This subclass is indented under subclass 25.1. Apparatus comprising structure for gripping a saw blank or blade.

SEE OR SEARCH CLASS:
144, Woodworking, subclasses 273.1+, for a miscellaneous clamp or clamping device used in woodworking.
269, Work Holders, for a device of general utility to clamp or otherwise immobilize a workpiece being modified or treated.

79 Clamps and vises for holding circular saws during their manufacture or while being sharpened. Includes, mainly, clamps applied to the center of the saw, but also includes other forms of clamps having special attachments for centering the saw.

79.5 Vice:
This subclass is indented under subclass 78.1. Apparatus including a structure for immobilizing a saw blank or blade.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 423+ for a process of assembling, generally: particularly subclass 559 for a method of holding work not provided for elsewhere.
269, Work Holders, for a device for holding a workpiece being modified, generally. Class 269 is the residual locus

of device for holding material while that material is modified.

80 Tools especially adapted for inserting and extracting saw-teeth.

80.5 Chain saw sharpener:
This subclass is indented under subclass 25.1. Apparatus for making the cutting edge of a tooth element of a better shape for cutting, wherein the tooth is one of a series pivotally connected together to follow one another in cutting.

81 Miscellaneous devices and machines having a fibrous (i.e., leather, cloth, wood, etc.) working surface for sharpening razor blades and similar cutlery by application of the work thereto.

SEE OR SEARCH CLASS:
30, Cutlery, subclasses 35+ when razor features, such as means for securing the blade in operative relation to a gauge or guard that protects the skin from cuts, are claimed.
428, Stock Material or Miscellaneous Articles, subclass 473 for a plural layer web or sheet including a leather layer and adapted for use as a strop, and subclass 904 (a cross-reference art collection) for an artificial leather product or stock material.
451, Abrading, subclass 169, 316, and 318 for a stropping machine; subclasses 461+ and 526+ for a sharpener having a stropping surface and an abrading surface; subclass 459 for a strop renewing device; and subclasses 490+ for an abrasive surface adapted to sharpen a tool.

81.1 This subclass is indented under subclass 81. Device provided with means for putting the working surface under the proper or desired tautness.

SEE OR SEARCH CLASS:
451, Abrading, subclasses 490+ for an abrasive sheet holder with means to tension the sheet thereon.

81.2 This subclass is indented under subclass 81.1. Device wherein the tensioning means includes a helical screw operator.

81.3 This subclass is indented under subclass 81. Device wherein the sharpening device is wound, folded or otherwise reduced in overall dimension for storage purposes and/or stored in a receptacle provided therefor.

SEE OR SEARCH CLASS:
132, Toilet, subclass 292 for toiletry kits including a strop.

81.4 This subclass is indented under subclass 81.3. Device wherein storage is caused by a means which urges the strop to its position of confinement within the receptacle, such as a spring-actuated reel or a counter-weight.

SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 371+ for a spring power reeling device and subclasses 390+ for other motor powered reeling devices used to wind and unwind elongated material.

81.5 This subclass is indented under subclass 81. Device wherein the sharpening device is provided with means on one extreme for the purpose of suspension (i.e., hook, eye, etc.).

SEE OR SEARCH CLASS:
248, Supports, subclasses 317+ and more specifically 339+.

81.6 This subclass is indented under subclass 81.5. Device wherein the suspension means constitutes or comprises a swivel connection.

81.7 This subclass is indented under subclass 81. Device wherein said working surface is disclosed as following an arcuate or closed curved path during the sharpening operation.

81.8 This subclass is indented under subclass 81. Device wherein the working surface of the sharpening device is maintained in a condition other than flat.

SEE OR SEARCH THIS CLASS, SUBCLASS:
81.1, through 81.7, for other stropping devices having a nonplanar working surface.

82 Miscellaneous devices and machines for sharpening cutters by removing the material of the cutter adjacent to the edge by cutting, filing, or chipping, as distinguished from abrading or swaging. There are a few patents for scissors-sharpeners, the action of which is somewhat analogous to swaging sharpeners.

(1) Note. See this class, subclass 82.2.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 76.1+ for machines and processes for filing metal, which may be defined as cutting metal by a hard instrument having its surface or surfaces sharply ridged.
451, Abrading, for a method of or apparatus for sharpening a cutter by grinding.

82.1 This subclass is indented under subclass 82. Devices especially adapted to sharpen lawn mowers.

SEE OR SEARCH CLASS:
56, Harvesters, subclass 250 for rotating cutting reel mower organizations modified to facilitate sharpening.
451, Abrading, subclasses 419+ for an abrading device adapted to be attached to a cutting machine, such as a lawn mower, to sharpen the blade thereof.

82.2 This subclass is indented under subclass 82. Devices especially adapted to sharpen scissors.

SEE OR SEARCH CLASS:
451, Abrading, especially subclass 45 for a method of abrading to sharpening scissors.

83 Devices especially adapted to sharpen skates.

84 The title is self-explanatory.

SEE OR SEARCH CLASS:
51, Abrasive Tool Making Process, Material, or Composition, subclass 309 for making an abrasive tool of metal.
428, Stock Material or Miscellaneous Articles, subclass 684 for a metallic composite in which a component has a steel base.
451, Abrading, subclass 553 for an abrading tool comprising a metal rotary cylinder that turns about a stationary axis.

85 Disk-sharpening devices, including cutting or filing tools adapted to be rotated about the disk or against which the disk is rotated. This subclass comprises, mainly, devices for sharpening harrow disks.

(1) Note. See this class, subclass 89.2 for devices for sharpening harrow disks, etc., by swaging by rolls or otherwise.

SEE OR SEARCH CLASS:
172, Earth Working, subclass 437 for earth working apparatus comprising the combination of an earth working disk and means to sharpen it.
451, Abrading, especially subclasses 321+ for a device for sharpening a disc by grinding.

86 Devices comprising a plurality of converging cutting or filing blades, the article to be sharpened being passed between them, thereby having stock removed from both sides of the blade adjacent to the edge thereof.

SEE OR SEARCH CLASS:
451, Abrading, subclasses 490+ for a tool support for a flexible-member abrading tool.

87 Devices comprising a plurality of cutting disks or files, such disks being arranged in such a manner that the circumferences of the disks are tangent to the same line or overlap one another.

SEE OR SEARCH CLASS:
451, Abrading, subclasses 364+ for a work holder for use with abrading device.

88 Devices for sharpening cutters comprising an edged blade or a file against which the article to be sharpened is directed by means of a guide usually angularly disposed relative to the blade.

(1) Note. See this class, subclass 82.2.

SEE OR SEARCH CLASS:
451, Abrading, subclasses 364+ for a work holder for use with abrading device.

89 Devices for sharpening cutters in which the article to be sharpened is directed against a disk cutter or file by means of a guide.

SEE OR SEARCH CLASS:
451, Abrading, subclasses 364+ for a work holder for use with abrading device.

89.1 Machines, devices and processes for serrating the metal adjacent to the edges of cutters, the serrations extending in most instances across the beveled portion of the blade and obliquely to the edge.

89.2 Machines and devices for sharpening metal tools by forging or rolling the metal adjacent to the edge.

SEE OR SEARCH CLASS:
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.

101.1 BLANK OR PROCESS:
This subclass is indented under the class definition. Invention comprising stock material having some of the physical characteristics of a desired tool; or comprising a method of modifying such stock material to make it into a desired tool.

(1) Note. Included herein is a blank for, or process of making a work holder, if not provided for elsewhere.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 428+ for a process of assembling and joining, generally; particularly subclass 559 for a method of holding work not provided for elsewhere.
72, Metal Deforming, for shaping metal, generally (which may be combined with cutting). The operation of Class 72 may prepare a tool blank, but is not restricted an operation of converting such a blank into a tool.
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 1+ for a process of making a product by laminating, not restricted to tool making.
228, Metal Fusion Bonding, subclasses 101+ for a process generally, which may include tool making, including only such step or steps as is necessary for the formation of a single joint by soldering, brazing, or welding.
269, Work Holders, for a device for holding a workpiece being modified, generally. Class 269 is the residual locus of a device for holding material while that material is modified.
409, Gear Cutting, Milling or Planing, subclasses 66+ for process of milling a thread or helix into a workpiece (as in forming a drill bit blank, a thread cutting tap, or a thread cutting die).
419, Powder Metallurgy Processes, for a method of making a blank of general utility from metal or alloy powders by sintering, especially subclasses 10+ for such a method performed upon a composition which is particularly suited for use as a die, drill, or cutting tool, in general.
428, Stock Material or Miscellaneous Articles, subclasses 544+ for stock material, generally, e.g., for indefinite length stock material of metal or having a metallic component; especially subclass 599 for metallic stock having both thickness and nonthickness surfaces of defined configuration, and subclass 602 for metallic stock material whose symmetrical shape varies in thickness longitudinally.
451, Abrading, subclasses 28+ for a method of finishing a tool by abrading.

102 Processes for forming auger bits, also blanks especially adapted to be made into augers.

SEE OR SEARCH CLASS:

175, Boring or Penetrating the Earth, subclasses 374+ and 425+ for an earth boring tool made of a specific material.

103. Processes for making the heads of axes, adzes, hammers, and hatchets (mainly wood-working-tools), also blanks specially adapted to be made into such tools.

104.1 Cutlery:
This subclass is indented under subclass 101.1. Blank or process comprising stock material for, or a method of making an article commonly known as "cutlery".

(1) Note. "Cutlery" includes a knife, scissors, hand shears, a fork or a spoon.

105 Processes for making metallic table forks and spoons, also patents upon blanks specially adapted to be made into such articles.

SEE OR SEARCH THIS CLASS, SUBCLASS:

111, for processes for making metallic forks for heavy work.

106 Processes for making hollow handles of articles of cutlery, also making articles of cutlery having hollow handles, also blanks specially adapted to be formed into such articles.

106.5 Hand shears:
This subclass is indented under subclass 104.1. Blank or process comprising stock material for, or a method of, making a cutting device intended to be manually supported during operation, which device includes a pair of cutting blades that move adjacent to and past each other to sever a workpiece therebetween by a shearing action.

(1) Note. A pair of scissors is included in this subclass.

107.1 Die:
This subclass is indented under subclass 101.1. Blank or process comprising stock material for, or method of, making an instrumentality for engaging a workpiece and directly performing work thereon.

(1) Note. "Die" includes a tool of a metal-forging machine, a metal shaping machine, stencil punching machine, metal shaping machine, stencil punching machine, metal-ornamenting machine, etc.

107.4 Drawing die:
This subclass is indented under subclass 107.1. Blank or process comprising stock material for, or method of, making a tool having an aperture through which work is pulled to treat that work.

107.6 Spinnerette:
This subclass is indented under subclass 107.1. Blank or process comprising stock material for, or method of, making a tool having relatively small, apertures through which flowable material is extruded to form strands of product.

107.8 Steel rule die:
This subclass is indented under subclass 107.1. Blank or process comprising stock material for, or method of, making a tool having a cutting edge extending along a first plane and having a force receiving edge extending along a second plane that is parallel with the first plane, said tool being made of a strip of sheet metal with the cutting edge at one edge, the force receiving edge at an opposing edge wherein the sheet like dimension of the tool extends normally to the first and second plane.

(1) Note. The die made from the blank of this subclass or by the method of this subclass may be used in a "clicker die" press and is similar in structure to some cookie cutters.

108.1 Drill:
This subclass is indented under subclass 107.1. Invention comprising stock material for, or method of, making a tool intended to turn about an axis and cut a workpiece by relative rotation and relative axial movement therewith.

(1) Note. Including herein the making of a metal cutting, wood cutting, or stone cutting drill.

SEE OR SEARCH CLASS:

175, Boring or Penetrating the Earth, subclasses 374+ and 425+ for an earth boring bit made of specific material.

409, Gear Cutting, Milling or Planing, subclass 66, for a process of milling a thread or helix on a workpiece, such as in making a drill bit, wherein the operation is not restricted to making of a tool.

451, Abrading, subclass 48 for a process of abrading a drill, including forming a drill bit by abrading only.

108.2 Rock drill:

This subclass is indented under subclass 108.1. Invention comprising stock material for, or a method of, making a drill capable of cutting stone.

108.4 Well drill:

This subclass is indented under subclass 108.1. Invention comprising a stock material for, or method of making a drill intended to penetrate the earth to access fluid therein.

108.6 Twist drill:

This subclass is indented under subclass 108.1. Invention comprising stock material for, or a method of, making a drill having a solid center and a helically spiralled marginal extent revolved thereabout, and having a radially extending web that continuously connect the solid center and the helically spiraled marginal extent.

109 Processes for making hoes, mattock, grub-hoes, or other hand-digging tools adapted to strike blows.

110 Processes for making hand-operated lock keys, also patents upon blanks for making keys.

(1) Note. It does not include processes for making watch keys, which are to be found in this class, subclass 114, nor does it include processes for making keys for holding pinions on shafts, etc.

111 Processes for making metallic tools having teeth or tines to be used for heavy work, comprising pitchforks, manure-forks, garden-rakes, potato-rakes, etc., also blanks specially adapted to be made into such articles.

112 Processes for making saws, including forming saw-teeth, sharpening, gumming, stretching, and setting and patching saws etc., also blanks for saw-blades, patches for cracked blades, etc.

113 Processes for making shovels, spades, scoops, etc., also blanks specially adapted to be made into such articles.

114 Processes for making wrenches, including watch and clock keys, also blanks specially adapted to be made into such articles.

115 Rotary cutter:

This subclass is indented under subclass 101.1. Invention comprising stock material for, or a method of, making a work engaging member having a sharp cutting edge, which member is of generally circular configuration about a center axis, and is intended to turn about that axis to cut a workpiece.

116 Cutter of sheet metal:

This subclass is indented under subclass 101.1. Invention comprising stock material for, or a method of, making a work cutting member of relatively thin metallic material.

117 Involving use of tap or die:

This subclass is indented under subclass 101.1. Invention including utilization of a threaded member to cut or impress a helical shape on the outer surface of a rod-like blank, or on the inner surface of a pipe-like blank.

118 Scythe:

This subclass is indented under subclass 101.1. Invention comprising stock material for, or a method of, making a tool having a sharp cutting blade intended to be manually supported in the hands of an operative and manipulated to swing just above the ground with the cutting edge generally parallel to the ground to sever grass or other small stem plants growing therefrom.

119 Hand tool:

This subclass is indented under subclass 101.1. Invention comprising stock material for, or a method of, making a tool intended, when in

use, to be supported by hand or hands of an operative.

END